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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/362,698	07/29/1999	TAKASHI KATO	684.2621CIP	7175

5514 7590 07/31/2003

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

AMARI, ALESSANDRO V

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/362,698

Applicant(s)

KATO ET AL.

Examiner

Alessandro V. Amari

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28,29,33,34 and 38-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28,29,33,34 and 38-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>22</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 28, 29, 33, 34, 38-47, 49-52 and 54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji et al U.S. Patent 5,424,552 in view of Hasegawa et al U.S. Patent 6,157,452.

In regard to claims 28, 33, 42, 49, 51 and 54, Tsuji et al. discloses (see Figure 1) an optical system for forming an image of an object or a projection exposure apparatus comprising an illumination optical system (6) for illuminating a pattern formed on a mask and a projection optical system for projecting the pattern of the mask onto a wafer as shown in Figure 1, said optical system comprising: an optical element (R), which is deformed by the weight thereof as described in column 27, lines 44-68, and at least one optical member (40, 41, 43, 45) having an aspherical surface for preventing a change in optical performance of said optical system due to deformation of said optical element as described in column 27, lines 44-68, when said optical element is provided in said optical system or being disposed adjacent to said optical lens element as shown in Figure 1.

However, in regard to claims 28, 33, 38, 40, 42, 43, 44, 47, 49, 51, 52, and 54, Tsuji et al does not teach that the optical element is a optical lens element having a

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refractive power wherein the refractive power is a positive or a negative refractive power and that the optical lens element is a diffractive optical lens element.

In regard to 28, 33, 38, 40, 42, 43, 44, 47, 49, 51, 52, and 54, Hasegawa et al does teach (see Figures 1, 2, 4, 6A, 6B) that the optical element (MM) is a optical lens element having a refractive power element wherein the refractive power is a positive or a negative refractive power and that the optical lens element is a diffractive optical lens as described in column 1, lines 47-65, column 5, lines 47-67 and column 6, lines 1-25.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the optical lens element as taught by Hasegawa et al in the system of Tsuji et al in order to more precisely position the projection of light from a light source so that manufacture of semiconductor devices of high integration is facilitated.

Regarding claims 29, 39, 41 and 45, Tsuji et al discloses that said at least one optical member has at least one aspherical surface as shown in Figure 1.

Regarding claims 34, 50 and 55, Tsuji et al. discloses a device manufacturing method including a process for transferring, through projection exposure, a pattern of a mask onto a wafer by use of a projection exposure apparatus as described in column 5, lines 65-68, column 6, lines 32 and as shown in Figure 1.

Regarding claim 46, Tsuji et al teaches (see Figure 1) a second optical lens (40, 41, 43, 45) element juxtaposed to said optical lens element, wherein said at least one aspherical surface is provided on said optical lens element as shown in Figure 1.

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3. Claims 48 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji et al U.S. Patent 5,424,552 in view of Hasegawa et al U.S. Patent 6,157,452 and further in view of Swanson et al U.S. Patent 5,218,471.

Regarding claims 48 and 53, Tsuji et al in view of Hasegawa et al teach the invention as set forth above but do not teach that the optical lens element has a step-like shape.

Regarding claims 48 and 53, Swanson et al does teach that an optical lens element has a step-like shape as shown in Figure 1.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the optical lens element with the step like shape taught by Swanson in the combination of Tsuji et al and Hasegawa et al in order to achieve higher diffractive efficiency for the system.

Response to Arguments

4. Applicant's arguments with respect to claims 28, 29, 33, 34, 38-55 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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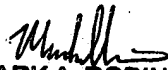
TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (703) 305-0024. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava *AM*
July 21, 2003


MARK A. ROBINSON
PRIMARY EXAMINER